EVALUATION OF SHELF LIFE OF CHICKEN MALAI KEBAB AT REFRIGERATED STORAGE OF BELOW 4^0C TEMPERATURE

Abstract

In the present study an attempt was made to evaluate the shelf life of chicken breast boneless marinated with malai spice mix (chicken malai kebab) with control raw chicken breast boneless. Both samples were evaluated for different meat quality parameters for six days under chilled storage conditions of below 4^0C temperature. Based on the different physico-chemical and microbiological reports, observed spoilage changes started in the scores of fresh raw chicken breast boneless on 4^{th} day of storage life. Where as in marinated chicken breast boneless malai kebab samples the spoilage changes observed on 6^{th} day of chilled storage of below 4^0C temperature.

Key words: Chicken breast boneless, chicken malai kebab, shelf life, marination

1. Introduction

Chicken breast boneless is the most tender, most desired cut of the chicken. It's is lean white meat full of proteins and is great for you even if you're on a diet. It's versatile and can be cooked in many ways. Boneless Chicken Breasts are the best when it comes to baking, grilling or frying. Chicken Malai Kebab is an easy-to-make appetizer recipe that you can prepare for your family and friends on occasions like kitty party, game night, pot luck and even anniversary. This dish of the chicken malai Kebab is prepared with breast boneless chicken pieces which is marinated with malai spice mix of spices and then grilled (Salahuddin, M., N, *et al* 1988). Tender pieces of boneless chicken are marinated in a unique blend of curd, yogurt, cream, cheese, papaya and spices and cooked on a grill or oven. Tossed with mint chutney, kebab masala or garam masala powder and coriander leaves, this is a succulent kebab recipe that will make your mouth water. The specialty of this chicken recipe is that it is stuffed with fresh cream and low fat mozzarella cheese, that gives your taste buds a creamy and cheesy taste. chicken malai kebab recipe for soft, juicy kababs on skewers that will simply melt in your mouth.

2. Materials and methods

2.1 Experimental design

Fresh chicken breast boneless of poultry broilers were purchased from a local market in Hyderabad. The raw chicken breast boneless was marinated with malai spice mix and packed and kept at below 4°C. The raw chilled chicken breast boneless (without marination) are used as a control. The physico-chemical and microbiological parameters of both control and marinated chicken breast boneless malai kebab samples were evaluated for six days under chilled storage conditions of below 4^0C temperature

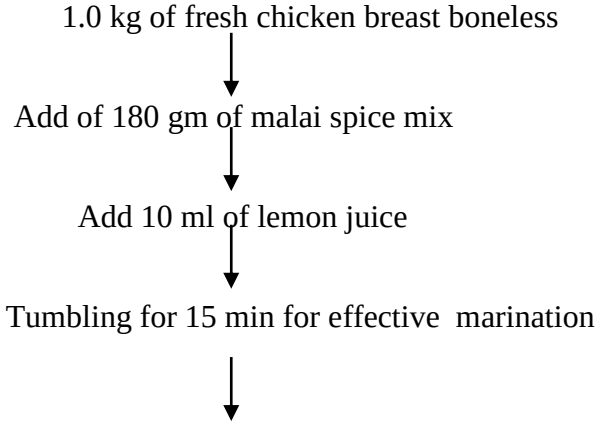
Table 1: Formulation of Malai spice mix:

S.No.	Name of the ingredient	Quantity (gm)
1	Curd	20
2	Ginger garlic paste	15
3	Lemon juice	10
4	Chilli paste	10
5	Oil	10
6	Salt	10
7	Nimmis	5
8	Cloves	5
9	Cardamom	5
10	Almond meal (almonds and cashews)	10

Table 2: Formulation of Marination: Chicken breast boneless malai kebab

S.No	Product	Quantity
1	Raw chicken breast boneless (kg)	1.0 kg
2	Lemon juice (ml)	10 ml
3	Malai spice mix (kg)	180 gm

Fig 1: Processing Flow chart:



Packing of marinated chicken malai kebab

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Storage at below 4°C temperature

2.3 Physico-chemical parameters

In Physico-chemical parameters the pH and Drip loss were evaluated for raw chicken breast boneless and marinated chicken malai kebab samples as per standard procedure.

2.4 Microbiological analysis:

2.4.1 Standard plate count :

Standard plate count (SPC) of each sample was estimated by pour plate technique described by Swanson *et al*. (2001). From the selected 10 fold dilutions of each sample, one ml of the inoculum was transferred onto duplicate petri-dishes o f uniform size. To each of the inoculated plates, about 15-20 ml sterile molten standard plate count agar (SPCA) (Hi-media) maintained at 45°C was poured. The inoculum was mixed with the medium by gentle rotatory movement o f the inoculated petri-dishes in clockwise, anticlockwise, forward and backward manner. The inoculated plates were allowed to solidify at room temperature and were then incubated at 37°C for 24 h aerobically. At the end of incubation period, petri-dishes with a bacterial count between 30 and 300 colonies were selected and count of each petri-dish was taken with the help of a colony counter. The number of colony forming units per ml of the carcass rinse was calculated by multiplying the' mean colony count of duplicate plates with dilution factor and the count per ml of the carcass rinse was expressed as log cfu/ml.

2.4.2 Coliforms count:

Coliforms count (CC) was estimated according to the procedure described by Nordic Committee on food analysis (1973). From the selected dilution, 0.1 ml o f the inoculum was inoculated onto duplicate plates of violet red bile agar (VRBA) (Himedia) and the inoculum was uniformly distributed on the medium with a sterile “L” shaped glass rod and the plates were incubated at 37°C for 24 h. At the end o f incubation, purplish red colonies with a diameter of atleast 0.5 mm, surrounded by a reddish zone of precipitate were counted as coliforms. The number of organisms per ml of the sample was estimated by applying the dilution factor on the mean count of duplicate plates and the count per ml of carcass rinse expressed as log cfu/ml.

3. Results and Discussion

3.1 Physico-chemical parameters

The Physico-chemical parameters (pH & Drip loss) scores of raw chicken breast boneless and marinated chicken malai kebab samples are increased from one to six days of chilled storage. Based on the results, observed spoilage changes in raw chicken breast boneless on 4^{th} day of chilled storage. Where as in chicken malai kebab samples there is no spoilage changes observed on 4^{th} day but started slight deteriorative changes on 6^{th} day of storage at below 4^0C. This results of present study were agreed with the Strange, E.D *et al*. (1977).

Table 3: Physico-chemical parameters of samples:

Days	Raw chicken breast boneless		Chicken malai kebab	
	pH	Drip loss (%)	pH	Drip loss (%)
1^{st}	5.7	0.46	5.6	0.38
2^{nd}	5.8	1.13	5.7	0.86
3^{rd}	5.9	2.24	5.8	1.56
4^{th}	6.4	3.67	5.9	2.78
5^{th}	6.6	4.97	6.0	3.44
6^{th}	6.8	6.68	6.6	5.99

3.2 Microbiological parameters:

The microbiological count of raw chicken breast boneless and marinated chicken malai kebab samples increased from 1^{st} day to 6^{th} of chilled storage of below 4^0C. As per the microbiological results there is increase in the scores of standard plate count and coliform count of raw chicken breast boneless on 4^{th} day of chilled storage, that indicates spoilage changes were started in the control sample on 4^{th} day of storage at below 4^0C. Where as in marinated chicken breast boneless malai kebab samples, the spoilage changes was started after 6^{th} day of chilled storage of below 4^0C. Similar results was explained by Nakagawa, H.R, *et al* (1999).

Table 4: Microbiological parameters of samples

Days	Raw chicken breast boneless		Chicken malai kebab	
	Standard plate count (cfu/gm)	Coliforms (cfu/gm)	Standard plate count (cfu/gm)	Coliforms (cfu/gm)
1^{st}	18×10^3	09	10×10^3	06
2^{nd}	26×10^3	11	14×10^3	09
3^{rd}	32×10^3	14	19×10^3	13
4^{th}	58×10^3	23	23×10^3	14
5^{th}	62×10^3	27	36×10^3	16
6^{th}	66×10^3	34	39×10^3	18

4. Conclusion

Present work was conducted to study the shelf life of marinated

chicken breast boneless malai kebab was compared with the control raw breast boneless chicken sample. Based on results it is concluded that, all the quality parameters of marinated chicken breast boneless malai kebab samples showed a best results compared to raw chilled chicken breast boneless sample. Hence the raw chicken breast boneless sample has the storage life of only four days at temperature of below 4^0C but the raw chicken breast boneless marinated with malai spice mix (chicken malai kebab) is further extended the shelf life from four days to six to seven days at temperature of below 4^0C.

DISCLAIMER (ARTIFICIAL INTELLIGENCE): Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

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